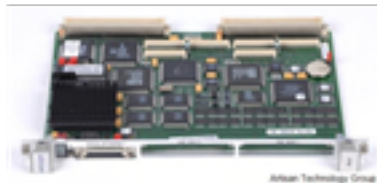


Heurikon Baja4700  
**Single Board Computer**



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## **Bus Interface**

- **VMEbus**
- VME64 architecture: D64A32(7)
- Operates in Master or Slave Mode
- 64-bit and 32-bit wide block transfers using local DMA capability
- System level controller functions including 4 level arbitration
- Uses VIC64 VMEbus interface chip optimized via custom ASIC
- 2K D64 block transfer rates:
  - 166 MHz version:
    - Read - 64.46 MBytes/sec
    - Write - 62.95 MBytes/sec
  - 175 MHz version:
    - Read - 60.39 MBytes/sec
    - Write - 61.82 MBytes/sec
- **VME64 Extensions support**
- 5-row P1 & P2 backplane connectors (100% compatible with 3-row DIN backplanes)
- Provides 46 additional user-definable lines on P2 connector rows D&Z
- 35 additional signal ground lines
- Slot geographical addressing
- 3.3 Volt power
- EMC front panel reduces EMI & RFI radiation
- **Mailbox interrupts**
- Allows remote control of Baja4700 via specified VMEbus addresses
- CPU interrupt and VMEbus lock functions supported
- **PMC**
- PCI Mezzanine Card interface
- Two 32-bit PMC expansion interfaces
- Uses PLX PMC9060 controller with 2 DMA channels
- Accepts 2 single-wide or 1 double-wide PMC module
- I/O can be routed to front panel or out VMEbus P2 connector

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## **Processor & Memory**

- **IDT ORION R4700**
- IDT R4700 implementation of MIPS R4000 architecture
- Available at 166 or 175 MHz

- True 64-bit RISC processor
  - 5-stage instruction pipeline
  - 16 KB two-way set associative instruction cache
  - 16 KB data cache
  - 4-deep write buffer
  - MMU and Translation Lookaside Buffer (TLB)
  - On-chip system control coprocessor manages exception handler, virtual memory system and transitions between processor operating modes
  - 64-bit floating point unit on-chip
  - Instruction set fully compatible with R4000 processor family
  - **Random Access Memory**
    - 16 or 64 Mbytes DRAM with parity
    - 64-bit data bus
    - 2-way bank interleaved architecture
    - One parity bit per byte
    - Transparent discrete hardware refresh
  - **Read Only Memory**
    - Up to 512 Kbytes capacity
    - Supports 64K, 128K and 512K
  - **Flash Memory**
    - 1 or 4 Mbytes flash memory
    - 512 Kbytes used for monitor & power-on diagnostics
    - Provides field upgradeable non-volatile program storage
  - **EEPROM**
    - 2 Kbytes Non-Volatile RAM
    - Storage for user definable parameters such as baud rates, software and hardware revision levels and configuration information
    - Provides field upgradeable non-volatile program storage
  - **Timers/Counters**
    - Real-time clock with 10 msec resolution
    - Three 32-bit timer/counters with 62.5 nsec resolution
    - Interrupt capability
- 

## Peripheral I/O

- **Ethernet Interface**
  - Intel 82596CA 32-bit LAN coprocessor
  - On-chip DMA, FIFO's, and memory management
  - Conforms to IEEE 802.3
  - AUI interface connector via cable off front panel
  - 800 Kbytes/sec throughput obtained using TCP/IP protocol
- **Serial I/O**
  - Two front panel serial I/O ports provided via ASIC
  - Intel 8251A UART emulation
  - RS-232 standard

- Transfer rates up to 1Mbit/sec (cable length dependent)
- 

## Software support

- Wind River Systems' VxWorks real-time operating system and development environment
  - ISI's pSOS real-time operating system and development environment
  - On-board monitor and power-on diagnostics
- 

## Physical Characteristics

- Multilayer with ground and VCC planes
  - Board size: 233.5 mm x 160 mm (9.19 in. x 6.3 in.)
  - Power requirements: +5VDC @ 5.8A, +12VDC @ 50mA, -12VDC@30mA (power measured with on 16MB board with no PMC modules and no Ethernet transceiver)
  - Storage Temperature: -40C to 85C
  - Operating range: 0-55C, 85% relative humidity (non-condensing)
  - **Front Panel**
    - Reset / Interrupt switch
    - LED display
    - Ethernet port connector
    - Serial port connector
- 

## Target Applications

- Communications system control
- Network bridge
- Switch control
- Video on demand server
- Data acquisition
- Imaging

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